


June 5, 1998

To: Ron Ott

From: Rick Woodard 

Subject: Statement of Water Quality Issues for Diversion Effects on Fisheries Team

You requested a reaction to the following statement that potentially would appear in the project report of the Diversion Effects team:

**From Bruce Herbold:**

>Following this morning's meeting, Larry Brown and I wrote the following to  
>insert into the report to cover the lack of analysis on water quality impacts.  
>Does it do the job? Another disclaimer on the effects on the analysis of  
>using a 'delta only' focus for assessing impacts was identified by many people  
>at the meeting -- any takers on writing that?  
>  
>Changes in point of diversion are expected to have large effects on a variety  
>of water quality parameters in the delta. San Joaquin River water carries a  
>significant load of agricultural chemicals, selenium, and other contaminants  
>and nutrients. Sacramento River water generally carries lower loads and  
>carries different metals such as copper, mercury, cadmium and zinc. Delta  
>water directly receive a variety of agricultural chemicals (including  
>herbicides), salts and organic carbon. Contaminant loads and concentrations  
>vary seasonally, vary with hydrology, and can be expected to vary with  
>different points of diversion and changes in operating criteria. The  
>availability and effects of these chemicals on fish populations, and the food  
>web that supports them, are unknown but potentially significant. Impacts may  
>occur through direct toxicity, but are more likely through chronic effects or  
>trophic disruptions. Synergisms of chronic effects with other factors such  
>as disease or reduced growth that prolongs exposure to predators may also  
>result in effects on fish populations. The Diversion Effects on Fisheries  
>Team has not attempted to incorporate any of these factors into the  
>estimations of fishery impacts. A team of appropriate experts should be  
>formed to evaluate these factors and help the Diversion Effects on Fisheries  
>Team to revise the present report.

**Comments:**

1. San Joaquin River water carries a significant load of agricultural chemicals, selenium, and other contaminants and nutrients. Sacramento River water generally carries lower loads and carries different metals such as copper, mercury, cadmium and zinc. This statement is not accurate. Loads of Total Dissolved Solids (salts), for example, are higher in the Sacramento River than the San Joaquin River, according to calculations made for the CALFED Water Quality Program. Similarly, copper, mercury, cadmium, zinc, nitrate, and organic carbon

loadings in the Sacramento River are larger than in the San Joaquin River, according to our calculations. I am aware of no reliable computations of pesticide loading in the two rivers, but am doubtful that pesticide loads in the San Joaquin River are as high as in the Sacramento River.

Reference: CALFED Bay-Delta Program. Affected Environment and Environmental Impacts. Water Quality - Draft Technical Report, September 1997, pp. 3-42 to 3-51.

2. *Delta water directly receive a variety of agricultural chemicals (including herbicides), salts and organic carbon.*

Salt and organic carbon are not agricultural chemicals, but are constituents of drainage from Delta islands resulting from salt concentration due to evaporation/transpiration losses, and from dissolution of organic Delta soils (and other less significant carbon sources), respectively.

3. *A team of appropriate experts should be formed to evaluate these factors and help the Diversion Effects on Fisheries Team to revise the present report.*

The needed scientific collaboration with the Diversion Effects on Fisheries team should be provided through the Water Quality Technical Group and the Water Quality Program element.

#### **Recommended Wording:**

I recommend the following language be incorporated into the report of the Diversion Effects on Fisheries team:

*Changes in point of diversion may have substantial effects on a variety of water quality parameters in the Delta. The San Joaquin and Sacramento River systems carry varying loads of industrial and agricultural chemicals, metals, selenium, nutrients, and other contaminants. Also, the waters of the Delta estuary receive discharges from various sources within the Delta, including treated municipal waste water, industrial discharges, municipal storm water runoff, Delta island drainage, petroleum and human wastes from recreational activities within the estuary, accidental chemical spills, and other sources. Contaminant loads and concentrations can vary seasonally and under differing hydrologic conditions, and may also be affected by changes in points of water diversion and water system operations.*

*The effects of these contaminants on fish populations, and the food web that supports them, are unknown but potentially significant. Impacts may occur through direct toxicity, and may also occur through chronic effects or trophic disruptions. Synergisms of chronic effects with other factors such as disease or reduced growth that prolongs exposure to predators may also result in effects on fish populations. The Diversion Effects on Fisheries Team has not attempted to incorporate any of these factors into the estimations of fishery impacts, and recommends collaborative efforts of the ecosystem restoration and water quality program elements to address these concerns as part of the plan for implementing the first phase of the CALFED program.*

Thank you for the opportunity to comment on this document.

cc: Lester Snow  
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